

## Claims

I claim:

1. An image projection lighting device comprising:

a base housing;

a yoke;

a lamp housing;

a processing system and a communications port,

wherein the processing system and the communications port are located within the lamp housing;

a video projector and an air filter system, wherein the video projector and the air filter system are located within the lamp housing;

wherein the air filter system comprises

a prefilter at an inlet of the lamp housing; and

a secondary filter that receives at least a portion of filtered air from the prefilter.

2. The image projection lighting device of claim 1 wherein

the prefilter filters particles above ten microns.

3. The image projection lighting device of claim 1 wherein

the prefilter is dark in color.

4. The image projection lighting device of claim 1 wherein

the secondary filter filters out substantially all fog particles above one micron

5. The image projection lighting device of claim 1 wherein

the secondary filter is a hepa filter.

6. The image projection lighting device of claim 1 wherein

the secondary filter is fabricated of mat glass filter media.

7. The image projection lighting device of claim 1 wherein

the prefilter is detachable from the secondary filter.

8. The image projection lighting device of claim 1 wherein

the prefilter is not detachable from the secondary filter.

9. The image projection lighting device of claim 1 wherein

the prefilter is washable.

10. The image projection lighting device of claim 1 wherein

the prefilter is an open cell foam.

11. the image projection lighting device of claim 1 wherein

the secondary filter is comprised of glass fibers.

12. An image projection lighting device comprising:

a base housing;

a yoke;

a lamp housing;

a processing system and a communications port which are located within the base housing

the lamp housing comprising

a video projector, an air filter system; and

a sensor which are located within the lamp housing;

wherein the sensor determines the condition of the air filter system and the condition of the air filter system is communicated to a technician by using information gather by the sensor.

13. The image projection lighting device of claim 12 wherein

the sensor is a pressure sensor

14. The image projection lighting device of claim 12 wherein

the sensor is a air flow sensor.

15. The image projection lighting device of claim 12 wherein

the sensor is a tachometer sensor.

16. The image projection lighting device of claim 12 wherein

the condition communicated to the technician is that the air filter system needs service.

17. An image projection lighting device comprising:

a base housing;

a yoke;

a lamp housing;

a processing system and a communications port, which are located within the base housing

a video projector, an air filter system, and a fan, which are located within the lamp housing;

wherein a fan current from the fan is sensed and a sensed current value representing the fan current is used by the processing system to determine the condition of the air filter system and the condition of the air filter system is communicated to a technician.

18. The image projection lighting device of claim 12

wherein the condition communicated to the technician is that the air filter system needs to be serviced.

19. An image projection lighting device comprising:

a base housing;

a yoke;

a lamp housing;

a processing system and

a communications port located within the base housing

a video projector,

and an air filter system, and

a fan located within the lamp housing;

wherein a condition of the air filter system is sensed by the processing system and the condition of the air filter system is communicated to a technician by the processing system.

20. An image projection lighting device comprising:

a base;

a yoke;

a lamp housing;

a lamp;

a light valve;

a processing system;

a communications port;

an air filter system; and

a fan; and

wherein the condition of the air filter system is sensed by the processing system and the condition of the air filter system is communicated to a technician by the processing system.

21. The image projection lighting device of claim 20 wherein

the air filter system is comprised of a prefilter and a secondary filter.

22 . The image projection lighting device of claim 21 wherein

the prefilter filters particles above 10 microns

23. The image projection lighting device of claim 21 wherein

the prefilter is dark in color.

24. The image projection lighting device of claim 21 wherein

the secondary filter filters out substantially all of fog particles above one micron

25. The image projection lighting device of claim 21 wherein

the secondary filter is a hepa filter.

26. The image projection lighting device of claim 21 wherein

the secondary filter is fabricated of mat glass filter media.

27. The image projection lighting device of claim 21 wherein

the prefilter is detachable from the secondary filter.

28. The image projection lighting device of claim 21 wherein

the prefilter is fixed to the secondary filter so that it can not be detached from the secondary filter.

29. The image projection lighting device of claim 27 wherein

the prefilter is washable.



30. The image projection lighting device of claim 21 wherein

the prefilter is an open cell foam.

31. The image projection lighting device of claim 21 wherein

the secondary filter is comprised of glass fibers.

32. The image projection lighting device of claim 20 wherein

the air filter system is comprised of mat glass media.

33. The image projection lighting device of claim 32 wherein

the air filter is a hepa filter.

34. The image projection lighting device of claim 20 wherein

the communication to the technician is sent over the communication system to a central controller.

35. The image projection lighting device of claim 21 wherein

the communication to the technician is accomplished by projecting an image from the image projection lighting device.

36. The image projection lighting device of claim 20 further comprising

a display device; and

wherein the communication to the technician is accomplished by the display device.

37. The image projection lighting device of claim 36 wherein

the display device is a pilot lamp.

38. The image projection lighting device of claim 20 further comprising

a transducer; and

wherein the condition of the filter is communicated by a transducer.

39. An image projection lighting device comprising:

a base;

a yoke;

a lamp housing;

a lamp;

a light valve

a processing system;

a communications port;

an air filter system; and

a fan

wherein the condition of the air filter system is determined by the processing system and power to the lamp is varied based upon the condition of the filter system.

40. An image projection lighting device comprising:

a base housing;

a yoke;

a lamp housing;

a processing system and a communications port located in the base housing;

a video projector

and an air filter system located in the lamp housing;

wherein the processing system determines the condition of the air filter system and under at least one condition the processing system commands a change of a projector lamp mode.

41. The image projection lighting device of claim 40 wherein

the mode is a reduced lamp power mode.

42. An image projection lighting device comprising:

a base;

a yoke;

a lamp housing

a lamp;

a light valve;

a processing system;

a communications port;

an air filter system; and

a fan; and

wherein the speed of the fan is varied by the condition of the filter system.

43. An image projection lighting device comprising:

a base;

a yoke;

a lamp housing

a lamp;

a light valve;

a coaxial cable

a processing system;

a communications port;

an air filter system; and

a fan; and

wherein the coaxial cable is used to communicate video signals between the base and the lamp housing and the coaxial cable has conductors constructed of cadmium bronze.

44. A method comprising the steps of

placing a processing system and a communications port within a base housing of an image projection lighting device; and

placing a video projector and an air filter system within the lamp housing

wherein the air filter system can filter out substantially all of the fog particles above one micron.

45. The method of claim 44 wherein

the air filter system comprises a prefilter at an inlet of the lamp housing; and  
a secondary filter that receives at least a portion of filtered air from the prefilter.

46. The method of claim 44 further comprising

placing a sensor within the lamp housing;  
using the sensor to determine a condition of the air filter system; and  
communicating the condition of the air filter system to a technician.

47. The method of claim 44 further comprising

placing a fan within the lamp housing; and  
sensing fan current from the fan;

using a sensed fan current value representing the fan current to determine the condition of the air filter system;

and communicating the condition of the air filter system to a technician.

48. The method of claim 47 wherein

the step of communicating the condition of the air filter system to a technician includes sending information regarding the condition over the communication system to a central controller.

49. The method of claim 48 wherein

the step of communicating the condition of the air filter system to a technician includes sending information regarding the condition over the communication system to a central controller.

50. A method of providing a fog particle filtration system for an image projection lighting device the method comprising:

placing a processing system and a communications port within a base housing of the image projection lighting device; and

placing a light valve, a lamp and an air filter system within a lamp housing of the image projection lighting device;

wherein the air filter system can filter out substantially all of the fog particles above one micron and further comprising

communicating the condition of the filter.

51. A method of providing an air filtration system for an image projection lighting device the method comprising:

placing a processing system and a communications port within a base housing of the image projection lighting device; and

placing a light valve, a lamp and an air filter system within a lamp housing of the image projection lighting device;

wherein the air filter system is comprised of a prefilter and a secondary filter.

52. The method of claim 51 wherein the prefilter is washable.

53. The method of claim 51 wherein the prefilter filters particles above ten microns.

54. The method of claim 51 wherein the secondary filter is comprised of glass fiber.

55. The method of claim 51 wherein the secondary filter is a hepa filter.



56. The method of claim 51 wherein the secondary filter is comprised of open cell foam.

57. A method of providing an air filtration system for an image projection lighting device, the method comprising:

placing a processing system and a communications port within a base housing of the image projection lighting device;

placing a light valve, a lamp, a sensor and an air filter system within a lamp housing of the image projection lighting device and using the sensor to determine a condition of the air filter system; and

communicating the condition of the air filter system to a technician.

58. The method of claim 57 wherein the sensor is a tachometer.

59. The method of claim 57 wherein the sensor is an air flow sensor.

60. The method of claim 57 wherein

the step of communicating the condition of the filter includes communicating the condition through the communications port.

61. The method of claim 57 wherein

the condition of the filter is determined by the processing system.

62. A method of providing an air filtration system for an image projection lighting device  
the method comprising:

placing a processing system and a communications port within a base housing of  
the image projection lighting device; and

placing a light valve, a lamp, a fan and an air filter system within a lamp housing of  
the image projection lighting device;

sensing fan current from the fan;

using a sensed fan current value representing the fan current to determine a  
condition of the air filter system;

and communicating the condition of the air filter system to a technician.